

WHAT IS CLAIMED IS:

- 1 1. An optical switching system for switching one of a plurality of optical
2 signals, the system comprising:
3 an optical cross-connect apparatus;
4 a control device coupled to the optical cross-connect apparatus;
5 a multiplexing device coupled to the optical cross-connect apparatus;
6 a trunk monitoring device disposed before the multiplexing device, the
7 trunk monitoring device being coupled to at least a first fiber and a second fiber;
8 a fiber switch coupled between the multiplexing device and the trunk
9 monitoring device, the fiber switch being adapted to switch an optical signal from
10 the first fiber to the second fiber.
- 1 2. The system of claim 1 wherein the fiber switch is a two by two switch.
- 1 3. The system of claim 1 wherein the multiplexing device is a DWDM
2 device.
- 1 4. The system of claim 1 wherein the optical cross-connect apparatus
2 comprises at least an array of 256 mirror devices.
- 1 5. The system of claim 1 wherein the fiber switch is positioned after the trunk
2 monitoring device.
- 1 6. The system of claim 1 wherein the first fiber is a primary fiber and the
2 second fiber is a back up fiber.
- 1 7. The system of claim 1 wherein the control device couples to the trunk
2 monitoring device.
- 1 8. The system of claim 1 wherein the control device couples to the fiber
2 switch.
- 1 9. The system of claim 1 wherein the trunk monitoring device monitors
2 defects selected from a fiber cut, a defective fiber, or other signal degrading causes.
- 1 10. The system of claim 1 wherein the system is coupled to a second system.

1 11. A method for monitoring and controlling optical signals through a long
2 haul communication network, the method comprising:
3 monitoring optical signals from a first optical path on a first fiber using a
4 trunk monitoring device, the trunk monitoring device being disposed before a
5 multiplexing device coupled to an input port of a switching system;
6 detecting a defect in the optical signals using the trunk monitoring device;
7 determining if the defect is from a selected defect being monitored;
8 if the defect is a selected defect, initiating a process to switch the optical
9 signals from the first path in the first fiber to a second path in a second fiber; and
10 transferring the optical signals from the first path to the second path.

1 12. The method of claim 11 wherein the selected defect is a fiber cut, a
2 degraded fiber, or other signal degrading causes.

1 13. The method of claim 11 wherein the transferring is provided by switching
2 the optical signals from the first path to the second path.

1 14. The method of claim 11 wherein the transferring is provided by a fiber
2 switch coupled to the multiplexing device and the trunk monitoring device.

1 15. The method of claim 14 wherein the fiber switching is between the fiber
2 switch and the first fiber and the second fiber.

1 16. A method for monitoring and controlling optical signals through an optical
2 communication network, the method comprising:
3 monitoring optical signals from a first optical path on a first fiber using a
4 trunk monitoring device, the trunk monitoring device being disposed before a
5 multiplexing device coupled to an input port of a switching system;
6 detecting a defect in the optical signals using the trunk monitoring device;
7 determining if the defect is from a selected defect being monitored;
8 if the defect is a selected defect, initiating a process to switch the optical
9 signals from the first path in the first fiber to a second path in a second fiber;
10 determining an available path for the second path from a pool of fibers, the
11 pool of fibers having a plurality of optical paths;
12 selecting one of the available paths for the second path; and

13 transferring the optical signals from the first path to the second path.

1 17. The method of claim 16 wherein the selected defect is a fiber cut, a
2 degraded fiber, or other signal degrading causes.

1 18. The method of claim 16 wherein the transferring is provided by switching
2 the optical signals from the first path to the second path.

1 19. The method of claim 16 wherein the transferring is provided by a fiber
2 switch coupled to the multiplexing device and the trunk monitoring device.

1 20. The method of claim 19 wherein the fiber switching is between the fiber
2 switch and the first fiber and the second fiber.

1 21. A method for monitoring and controlling optical signals through an optical
2 communication network, the method comprising:

3 monitoring optical signals from a first optical path on a first fiber using a
4 trunk monitoring device, the trunk monitoring device being disposed before a
5 multiplexing device coupled to an input port of a switching system;

6 detecting a defect in the optical signals using the trunk monitoring device;

7 determining if the defect is from a selected defect being monitored;

8 if the defect is a selected defect, initiating a process to switch the optical

9 signals from the first path in the first fiber to a second path in a second fiber based upon
10 predetermined selection criteria;

11 if the first optical path is for a first service level, suspending the process to
12 switch the optical signals from the first path to the second path;

13 if the first optical path is for a second service level, transferring the optical
14 signals from the first path to the second path.